Notice of Allowability	Application No.	Applicant(s)	
	09/737,129	BAYLOR ET AL.	
	Examiner	Art Unit	
	Syed J Ali	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *telephone communication with Applicant's representative*.

2. ☒ The allowed claim(s) is/are *1,3-17 and 20-33, renumbered as claims 1-30*.

3. ☒ The drawings filed on 12/14/00 are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

MENG-AE T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Koon Wong (Reg. No. 48,459) on April 7, 2005.

2. The application has been amended as follows:

(i) **Replace claim 1 as follows:**

1. A method for scheduling threads in a multi-processor computer system having an operating system at least one cache, comprising the steps of:

storing in a first data structure thread ids for at least some of the threads associated with a context switch performed by the operating system, each of the thread ids uniquely identifying one of the threads;

storing in a second data structure a plurality of entries for a plurality of groups of contiguous cache lines, each of the plurality of entries arranged such that a thread id in the first data structure is capable of being associated with at least one of the contiguous cache lines in at least one of the plurality of groups of contiguous cache lines, the thread identified by the thread id having accessed the at least one of the contiguous cache lines in the at least one of the plurality of groups of contiguous cache lines;

adding a group to the plurality of groups of contiguous cache lines when a contiguous cache line in the group is accessed by a given thread;

removing a group from the plurality of groups of contiguous cache lines when all contiguous cache lines in the group are flushed;

mining for patterns in the plurality of entries in the second data structure to locate multiples of a same thread id that repeat with respect to at least two of the plurality of groups of contiguous cache lines; and

scheduling on a same processing unit the threads identified by the located multiples of the same thread id and any other threads identified by any other thread ids associated with the at least two of the plurality of groups of contiguous cache lines.

(ii) **Claim 2 is cancelled.**

(iii) **Replace claim 16 as follows:**

16. A method for scheduling threads in a multi-processor computer system having an operating system at least one cache, comprising the steps of:

storing in a first data structure thread ids for at least some of the threads associated with a context switch performed by the operating system, each of the thread ids uniquely identifying one of the threads;

storing in a second data structure a plurality of entries for a plurality of groups of contiguous cache lines, each of the plurality of entries arranged such that a thread id in the first data structure is capable of being associated with at least one of the contiguous cache lines in at least one of the plurality of groups of contiguous cache lines, the thread identified by the thread id having accessed the at least one of the contiguous cache lines in the at least one of the plurality of groups of contiguous cache lines;

adding a group to the plurality of groups of contiguous cache lines when a contiguous cache line in the group is accessed by a given thread;

removing a group from the plurality of groups of contiguous cache lines when all contiguous cache lines in the group are flushed;

mining for patterns in the plurality of entries in the second data structure to locate multiples of a same thread id that repeat with respect to at least two of the plurality of groups of contiguous cache lines;

mapping the threads identified by the located multiples of the same thread id to at least one native thread; and

scheduling on a same processing unit the threads identified by the located multiples of the same thread id and any other threads identified by any other thread ids associated with the at least two of the plurality of groups of contiguous cache lines.

(iv) **Claims 18-19 are cancelled.**

(v) **Replace claim 33 as follows:**

33. A method for scheduling threads in a multi-processor computer system having an operating system at least one cache, comprising the steps of:

storing in a first data structure thread ids for at least some of the threads associated with a context switch performed by the operating system, each of the thread ids uniquely identifying one of the threads;

storing in a second data structure a plurality of entries for a plurality of groups of contiguous cache lines, each of the plurality of entries arranged such that a thread id in the first data structure is capable of being associated with at least one of the contiguous cache lines in at least one of the plurality of groups of contiguous cache lines, the thread identified by the thread id having accessed the at least one of the contiguous cache lines in the at least one of the plurality of groups of contiguous cache lines;

adding a group to the plurality of groups of contiguous cache lines when a contiguous cache line in the group is accessed by a given thread;

removing a group from the plurality of groups of contiguous cache lines when all contiguous cache lines in the group are flushed;

identifying pools of threads in the plurality of entries in the second data structure such that each of the pools of threads comprises the threads identified by a same thread id

that forms a multiple with respect to one of the plurality of groups of contiguous cache lines, the multiple repeating with respect to at least two of the plurality of groups of contiguous cache lines; and

scheduling on a same processing unit the threads identified by the located multiples of the same thread id and any other threads identified by any other thread ids associated with the at least two of the plurality of groups of contiguous cache lines.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
April 8, 2005

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